

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Posti	Examiner:	UNKNOWN
Serial No.:	TO BE ASSIGNED	Group Art Unit:	TO BE ASSIGNED
Filed:	June 22, 2001	Docket No.:	930.332USW1
Title:	MULTI-FREQUENCY TRANSMITTER USING PREDISTORTION AND A METHOD OF TRANSMITTING		

CERTIFICATE UNDER 37 C.F.R. 1.10:

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The undersigned hereby certifies that this Transmittal Letter and the paper or fee, as described herein, are being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

By: Kari Arnold

Kari Arnold

PRELIMINARY AMENDMENT

Box Patent Application  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

Please enter the following preliminary amendment into the above-referenced application.

ABSTRACT

Please insert the attached abstract into the application as the last page thereof.

CLAIMS

Please delete claims 1-22 as follows. Please enter new claims 23-44 as follows. A clean copy of the entire set of claims is included below.

23. (NEW) A multi frequency carrier transmitter comprising:

input means for receiving a plurality of different digital signals to be transmitted, said different signals to be transmitted on different carrier frequencies;

modulators for modulating said different signals at the respective frequencies;

amplifier means for receiving a composite signal comprising said different signals at the respective carrier frequencies and amplifying said composite signal; and

predistortion means for predistorting said plurality of digital signals during or after modulation of said different signals by said modulators and prior to amplification of the composite signal by said amplification means, said predistortion provided by said predistortion means being subsequently altered in dependence on the difference between said input signals and the output at said amplifier means.

24. (NEW) A transmitter as claimed in claim 23, wherein said input means are arranged to separately receive each of said different signals.

25. (NEW) A transmitter as claimed in claim 23, wherein combiner means are provided between the input means and the amplifier means for combining said plurality of different signals to provide a composite signal.

26. (NEW) A transmitter as claimed in claim 23, wherein the predistortion means are arranged to predistort individually each of the plurality of different signals.

27. (NEW) A transmitter as claimed in claim 26, wherein said predistortion means predistorts said signals before the plurality of different signals are combined by said combiner.

28. (NEW) A transmitter as claimed in claim 25, wherein the predistortion means is arranged to predistort the composite signal after the plurality of signals have been combined by the combiner.

29. (NEW) A transmitter as claimed in claim 23, comprising a feedback path arranged between the amplifying means and the predistorting means.

30. (NEW) A transmitter as claimed in claim 29, wherein the predistorting means is arranged to compare the output from the amplifying means from the feedback path with the signals received by the receiving means and to provide, if necessary, at least one new predistortion value to be applied to at least one subsequent signal received by said receiving means.

31. (NEW) A transmitter as claimed in claim 29, wherein means are provided in said feedback path for separating the output of the amplifying means into the plurality of different signals.

32. (NEW) A transmitter as claimed in claim 31, wherein the predistorting means is arranged to compare each of said separated signals with the corresponding

signal received from said input means and to determine if the at least one predistortion value needs to be altered.

33. (NEW) A transmitter as claimed in claim 29, wherein said predistorting means is arranged to compare the composite signal from the amplifying means with the plurality of different signals to provide, if necessary, the at least one new predistortion value.

34. (NEW) A transmitter as claimed in claim 23, wherein said predistortion means are arranged to provide a plurality of predistortion coefficients, at least one predistortion coefficient being provided for each multicarrier frequency.

35. (NEW) A transmitter as claimed in claim 34, wherein said predistortion coefficients for each multicarrier frequency takes into account characteristics of other of said multicarrier frequencies.

36. (NEW) A transmitter as claimed in claim 35, wherein said characteristics comprise one or more of the following:  
frequency; and distortion.

37. (NEW) A transmitter as claimed in claim 23, wherein the amplifier means comprises a nonlinear amplifier.

38. (NEW) A transmitter as claimed in claim 37, wherein said predistortion means is arranged to compensate for the nonlinearity of the phase and/or amplitude of the amplifier.

39. (NEW) A transmitter as claimed in claim 23, wherein digital to analogue convertor means are provided for converting said plurality of signals to analogue form before said signals are amplified by said amplifier means.

40. (NEW) A transmitter as claimed in claim 30, wherein analogue to digital convertor means are provided for converting the output from the feedback path to digital format prior to the output of the feedback path being input to said predistorting means.

41. (NEW) A transmitter as claimed in claim 31, wherein analogue to digital converter means are provided for converting the output of the feedback path to digital format prior to the separating means separating the output of the feedback path into a plurality of different signals.

42. (NEW) A base station comprising a transmitter as claimed in claim 23.

43. (NEW) A mobile station comprising a transmitter as claimed in claim 23.

44. (NEW) A multi carrier frequency transmission method comprising the steps of:

receiving a plurality of different digital signals to be transmitted, said different signals to be transmitted on different carrier frequencies;

modulating said different signals at the respective frequencies;

combining said plurality of different signals to provide a composite signal comprising the different signals at the respective carrier frequencies; and

amplifying said composite signal, wherein the method further comprises the steps of:

predistorting the plurality of different digital signals prior to amplification of the composite signal by the amplification means during or after the modulation step; and

altering the predistortion applied to subsequent signals in dependence on the difference between said different signals and the amplified signal.

#### **REMARKS**

The above preliminary amendment is made to insert an abstract page into the application and to enter new claims 23-44.

Applicant respectfully requests that this preliminary amendment be entered into the record prior to calculation of the filing fee and prior to examination and consideration of the above-identified application.

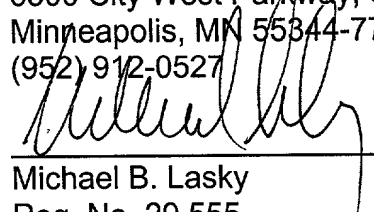
If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicant's attorney of record, Michael B. Lasky at 952-912-0527.

Respectfully submitted,

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Date: June 22, 2001

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